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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/206,216	12/05/1998	JEAN-PIERRE DATH	F-721	5195

25264 7590 10/31/2003

FINA TECHNOLOGY INC
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EXAMINER

NGUYEN, TAM M

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 10/31/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/206,216

Applicant(s)

DATH ET AL.

Examiner

Tam M. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-20 and 37-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-20 and 37-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Terminal Disclaimer

The terminal disclaimer filed on July 28, 2003 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of 09/206,207 and 09/206,208 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 17-20 and 37 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-16 of copending Application No. 09/206,218. Although the conflicting claims are not identical, they are not patentably distinct from each other because both process claims disclose the catalytic cracking of an olefin to produce propylene by using a dealuminated catalyst. The present claimed process does not disclose that the catalyst is prepared as claimed in claims 1-16 of application

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09/206,218. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the claimed process of the present application as claimed in the copending application because the present claimed catalyst is the same as the claimed catalyst of the copending application. Therefore, it would be expected that the outcome of the present claimed process would be the same or similar when preparing the catalyst as claimed in the claimed process of the copending application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 U.S.C. § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 17-20 and 37-44 are rejected under 35 U.S.C. 102(b) as being anticipated by EP 0109060 in view of either Glockner et al. (4,078,011) or Cosyns et al. (4,347,392).

The EP 0109060 reference discloses a process of cracking a hydrocarbon feed which comprises olefins having 4 to 12 carbon atoms into propylene and some ethylene. The feed is contacted with an alumino-silicate having a crystalline and zeolitic structure. The process is conducted at a temperature of from 400⁰ C to 600⁰ C, at about atmospheric pressure, and at a space velocity of from 5 to 200 h⁻¹. The behavior of the silicalites depends on the conversion pressure. If the pressure is atmospheric, the space velocity must be lower than 50 hr⁻¹. If the pressure is from 1.5 to 7.5 atmospheres, the space velocity must be above 50 hr⁻¹. The examples indicate selectivity of C₄ saturated compounds of less than 5 wt. %. Therefore, at least 95% of the C₂ and C₃ compounds present in the product must be olefins. The data in the table also indicates that propylene yield is within the claimed range and indicate that olefin contents of the feed and product are within ±15 % or ±10 % of each other. Alternatively, it is inherent that the EP reference would have olefins of the feedstock and of the effluent are within plus and minus 15 of each other because of the similarities by the EP process and the claimed process in terms of

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feedstock, catalyst, and operating conditions. It is noted that the reference does not specifically disclose a ratio of silicon/aluminum between 180 and 1000 or between 350 and 500. However, the reference discloses that the catalyst has a $\text{SiO}_2/\text{Al}_2\text{O}_3$ molar ratio equal to or greater than 350. This is equivalent to silicon/aluminum atomic ratios of equal to or greater than 175. Therefore, the examiner's position is that the claimed ratio of silicon/aluminum is embraced by the reference. (See page 1, lines 20-35; page 3, lines 18-40; page 5, lines 13-19; pages 6-7; claims 1-3)

Regarding claims 20 and 37, the EP reference does not specifically disclose that the atomic ratio of silicon to aluminum is from 180-1000. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the EP catalyst by using a catalyst having an atomic ratio of silicon to aluminum of 180-1000 because the EP reference discloses that a catalyst having an atomic ratio of silicon to aluminum greater than 175 can be used in the process.

Regarding claims 17-20 and 37-44, the EP 0109060 reference does not specifically disclose that the feed contains dienes, and does not disclose the step of hydrogenation of dienes.

Glockner discloses a process for selectively hydrogenating dienes at a temperature of from 150 to 500° F (65 to 260° C), at a pressure of from 1 to 1000 atm (1-1000 bar), and at LHSV of from 2 to 10. Glockner also discloses that the olefinic feedstock comprises about 0.1-20 wt.% of diene and the conversion of diene is up to 99.5 %. It is estimated that when an olefinic feedstock comprises about 0.1 wt. % of dienes, the amount of diene remain in the olefinic product would be about 0.0005 % [0.1 % (dienes in the feed) x 99.5 (% conversion)].

See col. 1, line 64-68; table II.

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Cosyns discloses a process for hydrogenating dienes (diolefins) containing olefins. (See abstract).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the EP 0109060 process by including a selective hydrogenation as disclosed by either Glockner or Cosyns because the EP process does not require the presence of dienes and one of ordinary skill in the art would look to the prior art processes such as disclosed by Glockner and Cosyns to remove dienes if such compounds are not desired.

It is noted that both Glockner and Cosyns do not disclose the amount of dienes in the product. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Colombo /Glockner or Colombo/Cosyns because it is within the level of one of skill in the art to remove all of dienes (e.g., 0.03 wt. %) from the olefin mixture to produce a pure olefins by employing either process of Glockner or Cosyns. The pure olefins from Glockner or Cosyns can be used in varied applications such as polymerization or catalytic cracking and it would be expected that the results would be the same or similar when using the pure olefin feedstock in the cracking process of Colombo because Colombo does not limit the amount of dienes in the feedstock.

Response to Arguments

The argument that it is not obvious to combine the Colombo process in view of either the Glockner or Cosyns process because Glockner is not concerned with the hydrogenation of a feedstock to be applied to a cracking process is not persuasive because Colombo uses an olefinic

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feedstock which does not contain dienes (e.g., examples 1-6). Therefore, one of skill in the art would use any olefinic feedstock including the olefinic feedstock from either Glockner or Cosyns wherein diene has been removed by hydrogenation as claimed.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

The argument that the Colombo reference fails to disclose the use of an MFI catalyst having a silicon/aluminum ratio of 180 to 1000 as required in applicant's claims is not persuasive because Colombo discloses a $\text{SiO}_2/\text{Al}_2\text{O}_3$ mole ratio in the zeolite of equal to or greater than 350. This is equivalent to silicon/alumina atomic ratios of equal to or greater than 175 and would necessarily include values within the range of 180-1000 as claimed.

The argument that Colombo does not disclose or suggest the particular combination of parameters (temperatures of from 500-600° C; LHSV of from 10-30 h⁻¹; pressure of from 0.1-2 bar) is not persuasive because Colombo discloses that the cracking process is operated at a temperature of from 400-600° C, at a LHSV of from 5-200 h⁻¹, and at a pressure of from 1.5 to 7.5 atmospheres. These conditions overlap the claimed parameters. Therefore, one of skill in the art would operate the process in the ranges conditions as discussed above including the overlapped conditions.

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The argument that the data in Colombo does not indicate that olefins contents of the feed and product are substantially the same by weight as set forth in claim 37 or they are within $\pm 15\%$ or $\pm 10\%$ of each other as set forth in claims 43 and 44 is not persuasive. Referring to Table 4, example 25, the examiner calculates that for every 100 grams of isobutene reactant, 77.3 % by weight are converted thereby producing a product that contains 22.7 grams of isobutene and 77.3 grams of other compounds. The combined selectivity of C_2 and C_3 of 43.4% results in the product containing 33.5 grams of $C_2 + C_3$ (77.3×0.434). With a selectivity to saturated compounds less than C_4 of 6.6 %, the amount of $C_2 + C_3$ olefins is estimated to be 31.3 grams ($33.5 \text{ grams} \times 0.934$). Also, a selectivity to linear butenes of 44% results in the production of 34.0 grams ($77.3 \text{ grams} \times 0.44$) of linear butenes. Adding the amount of isobutene, C_2 olefins, C_3 olefins, and linear butenes results in product containing approximately 88 grams of C_2 to C_4 olefins. This amount results in a product that has an olefin content within $\pm 15\%$ or $\pm 10\%$ of the olefin content of the feed.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tam M. Nguyen whose telephone number is (703) 305-7715.

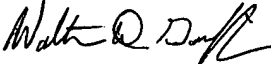
The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 703-308-6824. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Tam M. Nguyen
Examiner
Art Unit 1764

Tam Nguyen/ TN


Walter D. Griffin
Primary Examiner